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EVALUATION OF THE MAGNA FLASH IGNITION CONTROL SYSTEM ON THE 1971 VEGA

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Environmental Protection Agency
Ann Arbor, Michigan

February 1972

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16. Abstracts

An evaluation of an ignition control system was conducted. The manufacturer describes Magna-Flash as ignition control device designed to improve the performance of any engine using the battery, coil and distributor system. A 1971 Chevrolet Vega equipped with a 140 CID engine, and a manual three-speed transmission, was selected to be used in the evaluation. Four replications of baseline and device equipped tests were performed according to the three-bag constant volume sampling technique as prescribed for certification of 1975 model year vehicles. Bag samples were analyzed for hydrocarbons, carbon monoxide, carbon dioxide and oxides of nitrogen. The LA4-S4 driving schedule was employed. It was concluded that the Magna-Flash demonstrated no beneficial or adverse effect on the exhaust emissions of the Vega when tested by the 1975 Federal Test Procedure.

17. Key Words and Document Analysis. 17a. Descriptors

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Automobiles
Air pollution control equipment
Ignition systems
Exhaust emissions
Tests
Standards
Hydrocarbons
Carbon monoxide
Nitrogen oxides

17b. Identifiers/Open-Ended Terms

Magna-Flash Ignition Control System
Federal Test Procedure (1975)

17c. COSATI Field/Group 13B

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Background

Magna-Flash Manufacturing and Sales Company, Inc. of Ripley, Tennessee, contacted the Environmental Protection Agency to obtain an evaluation of an ignition control system. The company supplied data compiled by Automotive Research Associates Inc. indicating small reductions in carbon monoxide. ARA reported that the measured decrease was significant as it lay outside the bounds of test precision. It was further reported that the decrease in CO emission levels reflected an increase in overall combustion efficiency. On this basis it was decided to evaluate the system in the Ann Arbor laboratory.

Device

The manufacturer describes Magna-Flash as an ignition control device designed to improve the performance of any engine using the battery, coil and distributor system. The unit replaces the standard coil and is installed in the same manner as a conventional coil with leads to the battery and distributor points and a high tension lead to the distributor cap.

Test Program

A 1971 Chevrolet Vega with a 140 CID engine was selected to be used in the evaluation. This vehicle was equipped with a manual three-speed transmission. Four replications of baseline and device equipped tests were performed according to the three-bag constant volume sampling technique as prescribed for certification of 1975 model year vehicles. Details of this procedure can be found in the July 2, 1971, Federal Register.

Bag samples were analyzed using a flame ionization detector for hydrocarbons, non-dispersive infrared analyzer for carbon monoxide and carbon dioxide and a chemiluminescence analyzer for oxides of nitrogen. The LA4-S4 driving schedule was employed.

Emission Results

The following table indicated the average emission levels measured in each configuration. The results of each individual test are presented in the Appendix.

Average Emission Results
(grams per vehicle mile)

	HC	CO	CO_2	NOx
Baseline	1.5	33.5	288.7	2.2
Magna-Flash	1.6	34.6	322.6	2.2
% Reduction from baseline	-6%*	-3%*	-12%*	0%

* increase

The differences measured between the baseline and Magna-Flash equipped configurations are within the limits of test variation. Thus, no conclusive changes were measured.

Conclusion

Magna-Flash demonstrated no beneficial or adverse effect on the exhaust emissions of the Vega when tested by the 1975 Federal Test Procedure.

Magna-Flash Test Results

1975 FTP-CVS Procedure
1971 Chevrolet Vega

	Test#	Date	HC	CO	CO_2	NOx
Baseline	12-2122	1-26-72	1.49	33.90	284.7	2.12
	18-0121	1-27-72	1.45	32.81	285.1	—
	18-0122	1-28-72	1.55	36.01	272.92	2.26
	12-2125	1-31-72	1.46	31.21	312.17	2.18
Magna-Flash	18-0131	2-02-72	1.47	29.63	361.05	1.96
	12-2129	2-03-72	1.87	44.09	303.13	2.18
	12-2133	2-04-72	1.60	37.03	304.77	2.21
	12-2136	2-05-72	1.48	27.56	321.26	2.28